Supporting information

Impact of Cu doping on the electrochemical properties of $LiFePO_4$ synthesized via solution combustion method

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Synthesis of $LiFe_{1-x}Cu_xPO_4$

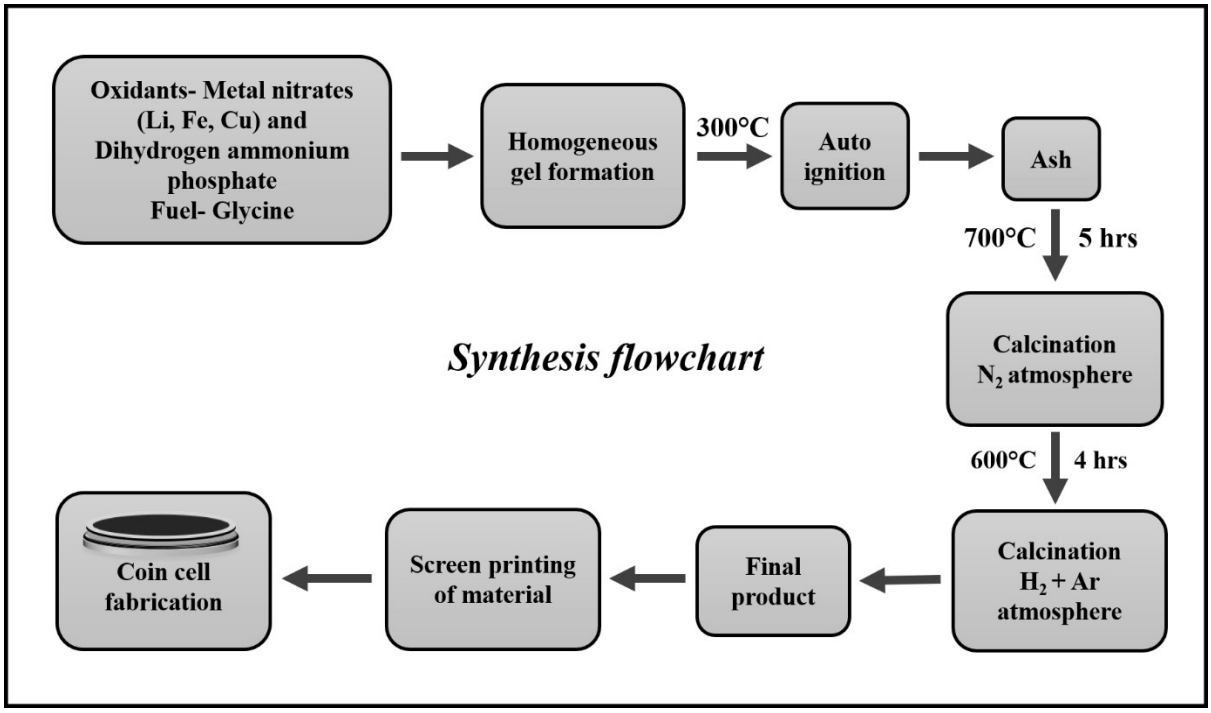

Fig. S1. Schematic illustration of the synthesis of Cu-doped LFP electrode via solution combustion method.

Table S1. Crystalline size and d spacing of Cu- doped samples

Doping amount	D_{AVG} (nm)	D_{311} (nm)
0.02	32.70	37.68
0.04	36.61	35.01
0.06	28.64	22.42

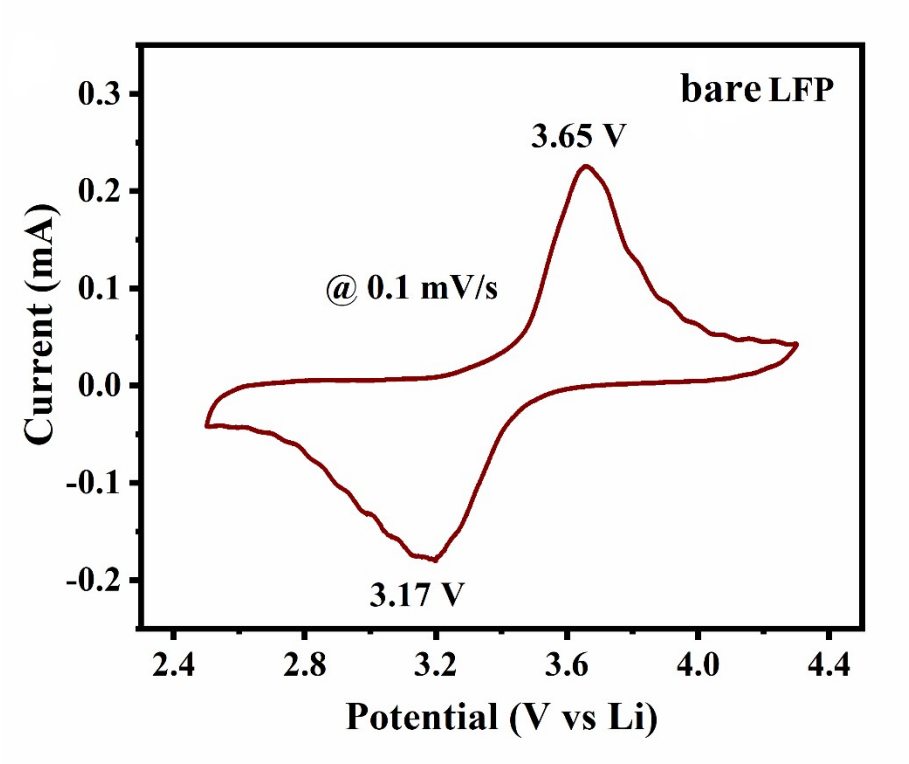

Fig. S2. CV profile of bare LFP at a scan rate of 0.1 mV/s.

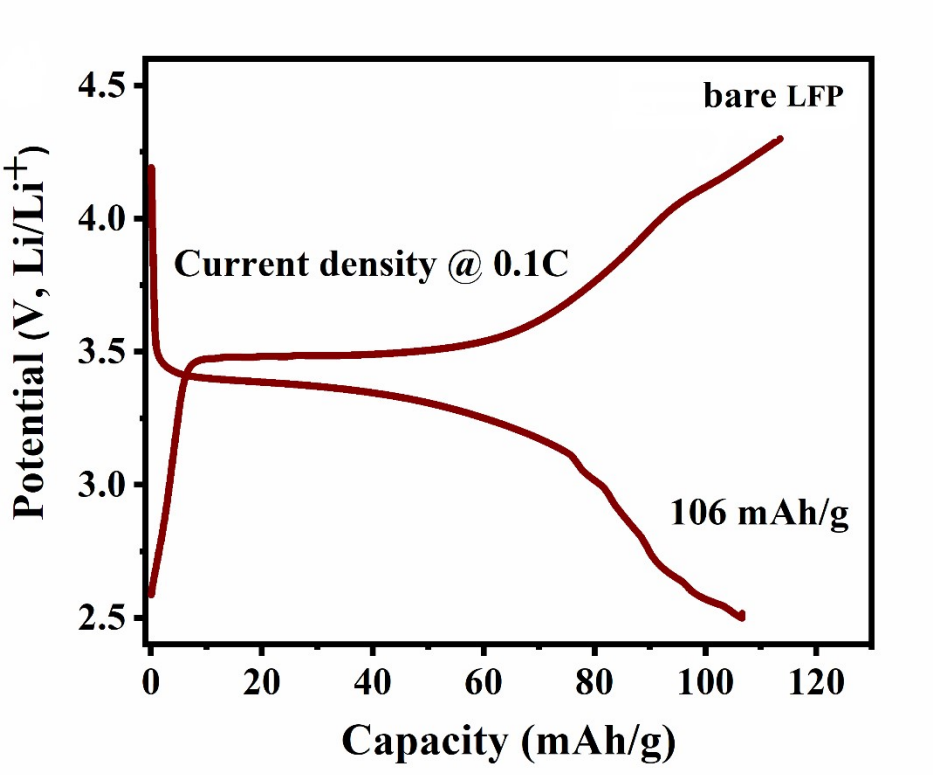

Fig. S3. Charge/discharge curve of bare LFP at 0.1 C rate

Table S2. Discharge capacity and coulombic efficiency of Cu1:Cu3 samples at different C rates

Sample	Discharge capacities (mAh/g)/ Coulombic efficiencies (%)				
	0.1C	**0.2C**	**0.5C**	**1C**	**2C**
Cu1	100.9/102.1	83.7/101.6	61.7/100.2	46.1/99.6	29.8/99.7
Cu2	107.9/102.6	85.6/101.1	64.9/100	51.4/100.4	36.6/99.7
Cu3	113.6/98.9	97.5/99.4	78.1/100.1	62.7/99.8	47.3/99.4

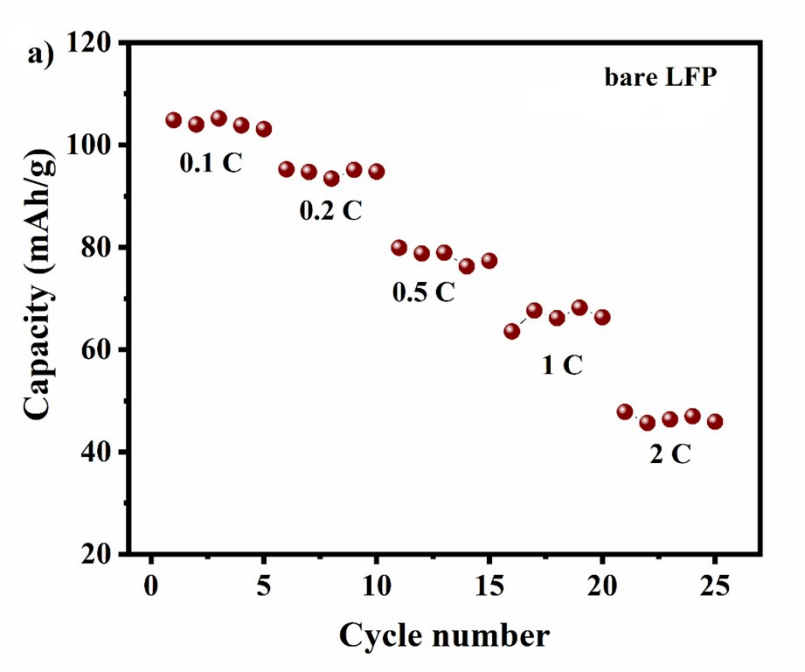

Fig. S4. Rate performance of bare LFP at various C rate

Table. S3 Discharge capacities of bare LFP and Cu-doped LFP samples at different C-rates

C rate	Specific capacity (mAh/g)			
	Cu1	**Cu2**	**Cu3**	**bare LFP**
0.1C	100.4	107.3	113.2	104.84
0.2C	83.3	86	97.7	95.25
0.5C	61.4	65.10	78.4	79.92
1C	46.6	51.2	62.9	63.57
2C	29.91	36.97	47.6	47.82
0.1C (After reverting)	92.2	96.9	105.5	-

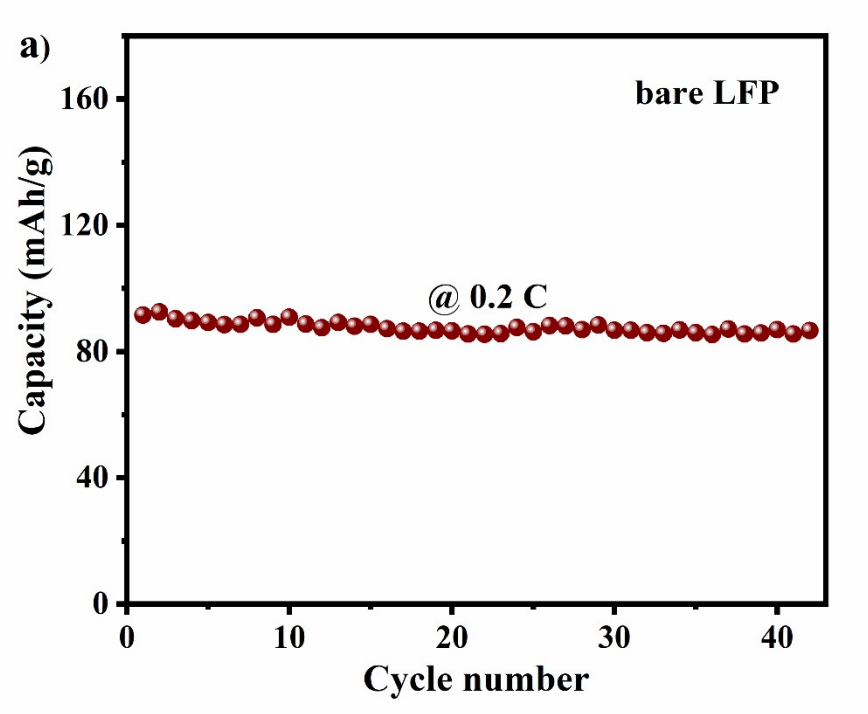

Fig. S5. Cycling stability of bare LFP at 0.2 C rate